CLAIMS

1. A permselective asymmetric hollow fibre membrane for the separation of toxic mediators from blood, comprised of at least one hydrophobic polymer and at least one hydrophilic polymer, characterized in that said membrane allows passage of molecules having a molecular weight of up to 45 000 Daltons in presence of whole blood, and has a molecular weight exclusion limit in water of about 200,000 Daltons.

2. A membrane according to claim 1, characterized in that said at least one hydrophilic polymer and at least one hydrophobic polymer are present in the membrane as domains on the surface.

3. A membrane according to any of claims 1 or 2, characterized in that said at least one hydrophobic polymer is present in an amount of 50-80 weight%, based on the weight of the membrane.

4. A membrane according to any of claims 1-3, characterized in that said at least one hydrophilic polymer is present in an amount of 20-50 weight%, based on the weight of the membrane.

5. A membrane according to any of claims 1-4, characterized in that said at least one hydrophobic polymer is chosen from the group consisting of polyarylethersulfone (PAES), polypropylene (PP), polysulfone (PSU), polymethylmethacrylate (PMMA), polycarbonate (PC), polyacrylonitrile (PAN), polyamide (PA), or polytetrafluorethylene (PTFE).

6. A membrane according to any of claims 1-5, characterized in that said at least one hydrophilic polymer is chosen from the group consisting of polyvinylpyrrolidone (PVP), polyethyleneglycol (PEG), polyvinylalcohol (PVA), and copolymer of polypropyleneoxide and polyethyleneoxide (PPO-PEO).

7. A membrane according to any of claims 1-6, c h a r a c t e r i z e d in that said membrane has at least a 3-layer asymmetric structure.

8. A membrane according to any of claims 1-7, c h a r a c t e r i z e d in that a separation layer is present in the inner most layer of the hollow fibre.

9. A membrane according to claim 8, c h a r a c t e r i z e d in that the separation layer has a thickness of < 0.5 µm.

10. A membrane according to any of claims 8 or 9, c h a r a c t e r i z e d in that the separation layer contains pore channels.

11. A membrane according to any of claims 1-10, c h a r a c t e r i z e d in that the pore size in the separation layer is 15-60 nm, preferably 20-40 nm.

12. A membrane according to any of claims 1-11, c h a r a c t e r i z e d in that the sieving coefficient for IL-6 in presence of whole blood is 0.9-1.0.

13. A membrane according to any of claims 1-12, c h a r a c t e r i z e d in that the sieving coefficient for albumin in presence of whole blood is below 0,05.

14. A membrane according to any of claims 1-13, c h a r a c t e r i z e d in that the openings of the pores on the outer surface are in the range of 0.5-3 µm and the number of said pores are in the range of 10,000 to 150,000 pores/mm^2, preferably 20,000 to 100,000 pores/mm^2.

15. A membrane according to claim 14, c h a r a c t e r i z e d in that said membrane has a four-layer asymmetric structure, and wherein said fourth outer layer has the form of a sponge layer having the outer surface according to claim 14.

16. Process for the preparation of a membrane according to claims 1-15 by solvent phase inversion spinning, comprising the steps of

a) dissolving the at least one hydrophobic polymer and the at least one hydrophilic polymer in a solvent to form a polymer solution,

b) extruding the formed polymer solution through an outer ring slit of a nozzle with two concentric openings,

c) extruding a centre fluid through the inner opening of the nozzle, and

d) subsequently washing and preferably drying the membrane, wherein the polymer solution comprises 10-20 weight% hydrophobic polymer and 2-11 weight% hydrophilic polymer.

17. Process according to claim 16, wherein the centre fluid comprises 45-60 weight% of a precipitation medium chosen from the group of water, glycerol and other alcohols.

18. Process according to any of claims 16 or 17, wherein the centre fluid comprises 40-55 weight% of solvent.

19. Process according to any of claims 16-18, wherein the polymer solution emerges from the outer slit opening is, on the outside of the precipitating fibre, exposed to a humid steam/air mixture.

20. Process according to claim 19, wherein the temperature of the humid steam/air mixture is at least 15°C, preferably at least 30°C, and not more than 75°C, preferably not more than 60°C.

21. Process according to any of claims 19 or 20, wherein the relative humidity in the humid steam/air mixture is between 60 and 100%.

22. Process according to any of claims 19-21, wherein the solvent content in the humid steam/air mixture is between 0,5 and 5 weight% related to water content.

23. Process according to any of claims 16-22, wherein the polymer solution contains 0.5-7.5 % by weight of suitable additives.

24. Process according to any of claims 16-23, wherein the solvent is chosen from the group comprising, n-methylpyrrolidon (NMP), dimethylacetamid (DMAC), dimethylsulphoxide (DMSO), dimethylformamide (DMF), butyrolactone and mixtures of said solvents.

25. Process according to any of claims 16-24, wherein the temperature at the spinning nozzle and of the polymer solution and centre fluid, is between 30°C and 80°C.

26. Use of a membrane according to any of claims 1-15 in hemofiltration of whole blood for treatment of toxic mediator related diseases.

27. Use of a membrane according to any of claims 1-15 in hemodialysis of whole blood for treatment of toxic mediator related diseases.

28. Use of a membrane according to any of claims 1-15 in hemodiafiltration of whole blood for treatment of toxic mediator related diseases.